

# Bulgarian agriculture in the conditions of the EU Common Agricultural Policy

## Bylgarskoto selsko stopanstvo v usloviata na OSP na Evropejskia syuz

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### Abstract

The agricultural sectors of the former centrally planned economies, including Bulgaria were in a state of economic crises in the period after socialist governments fell. The former system disappeared almost overnight while new market structures had not yet emerged. The outcome of this transition shocks was a sharp decline in both agricultural output and the sector's GDP in the early 1990s. Some countries of the Central and Eastern Europe (CEE) recovered from this initial decline much faster. The principle reason for the difference appears to be the more resolute adherence of CEE governments to reform policies throughout their economies. The purpose of this study is to get more knowledge about the structure and possibilities of Bulgarian agriculture after the transition period and last but not least, about the effects of the EU CAP on the Bulgarian economy and farmers. That is why were made some interviews, and besides, it was carried out a questionnaire survey in order to get a picture about how farmers act in a new environment called the Common Agricultural Policy of EU. For collecting information, as well as confirming or rejecting the investigation hypotheses chi-square analysis was applied.

**Keywords:** Bulgarian agriculture, CAP, farmers, hypothesis, organization form, survey

### Резюме

Селскостопансият сектор на бившите централно управлявани икономики, включително и България, беше в период на икономическа криза след падането на социалистическите правителства. Бившата система изчезна почти за една нощ докато новите пазарни структури все още не бяха се появили. Резултатът от този преходен шок беше рязко спадане както на селскостопанското

производство, така и на Брутния вътрешен продукт. Някои страни от Централна и Източна Европа се възстановиха от този първоначален спад много по-бързо в сравнение с други. Основната причина за тази разлика е, че някои от правителствата успяха да реформират по-решително икономиките си. Целта на това изследване е да получим повече знания и информация за селското стопанство на България през този преходен период и не на последно място за ефекта на ОСП на ЕС върху българското стопанство и земеделските производители. За тази цел бяха проведени достатъчно интервюта със земеделски производители, както и наблюдения върху дейността на редица земеделски стопанства, за да може да се даде отговор на въпроса как те действат в новата обкръжаваща среда, наречена ОСП. За събирането на информация, както и за потвърждаване или отричане на изследователските хипотези беше приложен хи-квадрат анализа.

**Ключови думи:** земеделски производители, ОСП, организационна форма, проучване, селско стопанство, хипотези

## Introduction

In the '90s Bulgarian agriculture experienced serious changes. Both internal and external markets narrowed down. The structures of ownership and production transformed considerably. The price gap between agricultural and industrial products widened, and prices in agriculture could hardly follow the inflation. The outcome of this transition shocks was a sharp decline in both agricultural output and the sector's GDP (value added) in the early 1990s. Some countries of the Central and Eastern Europe (CEE) recovered from this initial decline much faster than the former Soviet republics. The principle reason for the difference appears to be the more resolute adherence of CEE governments to reform policies throughout their economies (Gardner and Lerman, 2006). In Bulgaria the share of agriculture in GDP varied between 10-20% over the 1990s. Contrary to the situation in other CEE countries following 1993, the share of agriculture increased, reaching 18.7% of GDP in 1998 and decreased to 10.9% in 2004. The decline in the sector's share is due to the poor and unstable development of agriculture, which has resulted from its slow restructuring process. Since 2001, the GVA in the sector has stabilized and over the past years has remained at almost one and the same level. Overall, the level of agricultural production in Bulgaria fell to some 60% of its pre-reform level. As a result of the changes over the transition period, agricultural production dropped both in terms of output and in terms of yields.

Measures in agrarian policy only partly balanced the unfavourable effects and the decreasing conditions brought about a decline in production (Pete, 2004). In 2007 Bulgaria became member of the European Union. With it, it became concerned in the common cooperation, as well. Among the common policies concerning the member countries, the Common Agricultural Policy affects Bulgaria highly, being a traditional agricultural country.

As a purpose of the research it was set to get more knowledge about the structure and possibilities of Bulgarian agriculture after the transition period from centrally

planed to market economy, and last but not least, about the effects of the EU CAP on the Bulgarian economy and farmers. That is why were made some in-depth interviews, and besides, was carried out a questionnaire survey in order to get a picture about how farmers act in a new environment called the Common Agricultural Policy of EU.

## Model of Bulgarian agriculture

During the years of transition to market economy, and even up today the agriculture has been a sector with important social functions. Employment levels in agriculture in Bulgaria are considerably higher than in EU countries. For example, during the period 1990 - 2007 the share of the employed in the agricultural sector in Bulgaria was between 18% and 25%, while in Germany this parameter is below 3 percent, and in France - less than 2%. In the Czech Republic, Poland and Hungary the share of the employment in agriculture do not also exceed 10% of all employees. However, the trend in reducing the number of employed in agriculture is to be observed for the period 2003 - 2007, but this reduction has very slow rates.

The large number of the employed in agriculture in Bulgaria makes the Bulgarian model of agricultural production to be significantly different from the European model, the model of developed countries (Pochaleev and Todorova, 2011).

Another unfavourable trend of the native agriculture in the last 20 years is the age structure of employees in the sector. In 2007 only 8.08 percent of the employed in the agriculture are under the age of 35 years, and 33.59% are over 64 years old.

The educational level in Bulgarian agriculture is relatively low. More than half of the employees have primary and secondary education according to the National Institute of Statistics, and only 3% of farm managers have agricultural education. The CAP and its implementation in Bulgaria require specific qualifications: knowledge in the fields of information technology, management, environmental practices, etc.

The majority of farms are marked by low mechanization. The low level of mechanization and its absence in some of the farms and the use of mostly old equipment (over 85% of the used equipment is older than 10 years) involves the development of primitive, low-productive and inefficient production, which poses serious constraints to competitiveness.

From the analysis on the status of agriculture in Bulgaria, it is clear that the future development and transformation of the agricultural sector into a competitive one, into one that can withstand the competitive pressures of both the European and world markets appear to be an infinitely complex and responsible task (Kagatsume and Todorova, 2007).

The structure of the agricultural sector that has been established in respect to the amount of utilized agricultural area (UAA) is abnormal and does not contribute to the development of the agrarian sector in Bulgaria (Koprivlenski, 2000). In 2007, 54.1% of Bulgarian farms in size are smaller than 0.5 ha, and only 0.8 percent of the farms are over 100 ha in size, ie more than half the farms in the country cultivated only 1.5% of the total UAA. This reveals a structure of agriculture in which small farms predominate. The main reason for the existence of such a structure is the method of

land restitution in its real boundaries which was adopted. The dimensional structure of farms in Bulgaria is the factor which most greatly restricts the creation of viable farms. The small farms that are prevailing are characterized by low profitability, that can not attract young people to be involved in agriculture (Lian et al., 2014). The permanent establishment of semi-commercial farms is an inhibitory factor for the formation of market-oriented farms.

The above constraints can create the following problems: establishing a lasting trend of low-income and decreasing competitiveness due to low efficiency of the production factors. It is therefore necessary the dimensional structure of the farms to be transformed in the direction of medium and large family farms and cooperatives, as the output produced in small farms can hardly withstand the competitive pressures of both the EU and international markets.

Characteristic of Bulgarian agriculture is the presence of the following legal forms of farms:

- 1.Sole (individual) forms of organisation
- 2.Cooperative forms of organisation
- 3.Corporation (company) forms of organisation
- 4.Physical persons

Table 1. Structure of agricultural farms by legal status

Таблица 1. Структура на земеделските стопанства по юридически статут

Legal status	2005				2007			
	Farms number	%	UAA daa	%	Farms number	%	UAA daa	%
Physical persons	515300	99.00	9147394.6	33.51	476956	98.97	10334681.7	33.88
Sole proprietors	2158	0.41	3545969.4	12.99	1828	0.38	4087862.1	13.40
Cooperatives	1525	0.29	8908700.4	32.64	1156	0.24	7263054.5	23.81
Companies	1312	0.25	5225591.5	19.15	1763	0.37	7818844.7	25.63
Associations & other	234	0.04	466245.4	1.71	217	0.05	1003006.6	3.29
Total	520529	100.0	27293901.3	100.0	481920	100.0	30507449.6	100.0

Source: Ministry of Agriculture and Food (1991, 2002, 2004, 2006, 2008), "Agrostatistics"

Some differences in the objectives and the way of functioning is observed between the farms of natural and legal persons. The first exist mainly to meet their own needs. They participate in the market with products only when their amount exceeds their own needs. They are known as semi-commercial farms. The farms of the legal persons fully sell their production on the market.

Unlike the European agricultural structures, the transformation of which lasted for many years, and their adaptation to the challenges of external environment was conducted continuously, the CEE countries and Bulgaria in particular are faced with the task the process of restructuring to take place in much shorter time. The peculiarity in the case of the new member states is that they can not literally follow the steps and stages through which the European agriculture passed because of the differences in the types of factors of external environment, their strength and direction.

### The methodology of the study

The main methodological approach applied to the analysis and evaluation of the problems of the farms is the system approach. It is a methodology which views the objects of study as systems that are in steady touch with other systems. On their part, the systems are influenced both by their internal structure and the external environment. In conducting the study, the main principles of the system approach were taken into account: purposefulness, integrity, organisation, complexity.

To achieve the objectives of the study and to collect data on individual farms, the method of study based on questionnaires was chosen. Through the study, information was collected on typical farmers, on their production and economic indicators. To implement the survey, a questionnaire was developed comprising 44 open and closed questions. The open questions were prevailing. They were aimed at revealing the characteristics of the farm, its quantitative indicators and parameters. Another group of open questions required the expression of the owner's opinion and / or intention. The purpose of the inclusion of the closed questions was the differences in assessments of the respondents to be revealed.

Chi-square analysis, analysis of variance, and correlation analysis were chosen for processing of the empirical data. These types of analysis have proved to be the most appropriate statistical methods to confirm or deny the research hypotheses and to achieve the objectives of the study. The need for the use of the three statistical methods of research of the relationships was caused by the presence of both quantitative and qualitative variables in search of the correlations.

In applying the methods of verification of statistical hypotheses, have to specify what is meant by null hypothesis and alternative hypothesis. In this study, they are defined as follows:

- Null hypothesis H0: It states that there is no statistically significant relationship between the studied factors
- Alternative hypothesis H1: There is a statistically significant relationship between the two variables.

Taking into account the difficulties in collecting data at national and regional level and the lack of some information in some farms (data on the results of their activity), the research hypotheses subject to verification are the following:

Hypothesis A: The degree of adjustment of farms and their production to the requirements imposed by EU depends on their organizational form.

To confirm or reject this hypothesis, the question arises whether there is a substantial difference in the degree of fulfillment of the requirements in different forms of organisations.

The variable - organizational form is chosen to demonstrate that relatively smaller farms such as these having the organizational status of farmers have less opportunity to meet these requirements.

Hypothesis B: The choice of a measure under The Rural Region Development Programme 2007 - 2013 based on which the farms want to apply, on the one hand depends on the degree of their awareness and availability of funds and on the other of their organizational form.

Hypothesis C: The direction of change in income received by the farms after the accession of Bulgaria to the EU largely depends on their production specialization.

One of the main methodological issues of this paper is the determination of the scope of the research. In this context, the object of study, are the farms in the district of Plovdiv. The choice of the region subject to this research is based besides the subjective reasons on a sufficient number of objective reasons which make this decision not only applicable but also- expedient. Plovdiv is located in the central part of South Bulgaria and covers a western part of the Upper Thracian Valley, Karlovo valley, and the north slopes of the Rhodopes. The following agricultural sectors are highly developed in this region: vegetable growing, grain production, fruit growing, vine growing, growing of oil-bearing crops, production of paddy rice, and livestock breeding.

The four selected municipalities in Plovdiv District are: the Municipality of Saedinenie, the Municipality of Maritsa, the Municipality of Stamboliyski, and the Municipality of Rodopi.

The sample selected under the study is nested, with formation of four constituent units representing all farms in the four municipalities in the first level of selection. On the second level, each of the four nests is divided into four sets, which represent four organizational structures in each municipality - registered farmers, sole traders, companies, and agricultural cooperatives. The farms subject to the survey were selected among these 16 constituent units by simple random selection.

## Results and discussion

### **Degree of adjustment of farms and their production to the requirements imposed by EU**

With the accession of Bulgaria to European Union the farms in the country are facing a number of requirements imposed by the Common Agricultural Policy. At present, most of these farms have difficulties in meeting these requirements. The goal is to outline the main factors that determine the adjustment to these requirements and the problems faced by the farmers in their implementation. In this context, the attention will direct to two factors: the organizational form of the farm and the level of farmers' awareness of the requirements imposed on their farms.

-the relationship: organizational form - degree of compliance with the requirements



The data from the survey conducted for estimating the degree of adjustment of the farms in dependence of their organisational form are presented in Table 2.

Table 2. Degree of compliance with the requirements in dependence of organisational form

Таблица 2. Степен на съответствие с изискванията в зависимост от организационната форма

Degree of compliance with the requirements/ Organisational form	Sole trader	Registered farmer	Cooperatives	Companies	Degree of adjustment of the farms to the requirements in %
Comply with any requirement	2	1	1	2	17.14
Comply with a great number of the requirements	0	7	3	5	42.86
Comply with a small number of the requirements	1	7	0	1	25.71
Do not comply	1	4	0	0	14.29

Source: Interview with farmers

The table shows that 42.86 percent of the surveyed farms meet a great number of the requirements imposed on them by EU, and only 14.29 percent of the farms have not fulfilled them. For the purposes of the analysis the following hypotheses were composed:

H0: There is no significant relationship between the organizational form of the farm and the degree of its adjustment to the requirements imposed by the CAP.

H1: There is a significant relationship between the organizational form of the farm and the degree of its adjustment to the requirements imposed by the CAP.

Again, using the chi-squared analysis, statistical values are calculated to show the power of the relationship between the organizational form of the farms and the degree of their adaptation to the requirements of CAP. The estimated empirical characteristic is 13.207. For determining the theoretical value, the admissible error used in economic research was selected as to  $\alpha = 0.05$ , and the number of the degrees of freedom - as to  $v = (r-1) \cdot (C-1) = 9$ . The null hypothesis should not be confirmed on the hand of these values because  $t_{theor.} > t_{emp.}$ ,  $16.92 > 13.207$ . But as one of the conditions of the chi-squared analysis was not satisfied (in some cells the expected values are less than 5), should be look skeptically of the result obtained. The coefficient of Chuprov was calculated again in order to confirm or reject the result obtained. The relationship between the organisational form and the degree of compliance with the requirements is determined as weak, because the

coefficient value is 0.20. As a result, the null hypothesis is accepted to be true, i.e. the organisational form of farms does not affect the degree of compliance with the requirements of EU in the field of agriculture .

-relationship between the levels of awareness - the extent of fulfillment of the requirements

Another factor which influences the degree of fulfillment of the requirements is the level of awareness of farmers. It turns out that the farms that are familiar with the requirements of the CAP, have responded to these requirements to much greater extent than the farms that are lacking this information.

To determine the strength of the relationship between the level of awareness and the degree of fulfillment of the requirements of the CAP the following hypotheses were composed:

H0: There is no significant relationship between the level of awareness and the degree of fulfillment of the requirements.

H1: There is a significant relationship between the level of awareness and the degree of fulfillment of the requirements .

The results of the survey concerning the level of awareness of the farmers and the degree of fulfillment of the requirements are listed in Table 3.

Table 3. Level of fulfillment of EU requirements in dependence of the awareness of farms

Таблица 3. Степен на изпълнение на изискванията на ЕС в зависимост от информираността на земеделските стопанства

Level of fulfillment of EU requirements/Awareness of farms	I am aware of all requirements	I am aware of a part of the requirements	I am not aware
Fulfillment all the requirements	6	0	0
Fulfillment of a great number of the requirements	7	7	1
Fulfillment of a small number of the requirements	0	7	2
No fulfillment of any requirements	0	1	4

Source: Interview with farmers

In this case, using the chi-squared analysis , the alternative hypothesis was assumed to be true. It states that there is a significant relationship between the level of awareness and the level of fulfillment of the requirements (t theory. <t emp., 12.59 <29.29).



One of the main problems faced by farmers in the fulfillment of these requirements is the lack of sufficient funds. 45.71% of the farms surveyed indicated that because of lack of funds they can not adjust their farms to the requirements imposed by EU, since the preservation of the farms is much more important to them now. Another significant obstacle which hinders them in fulfilling the requirements is the bureaucracy. According to 14.28% of the farms, because of the high level of bureaucracy they failed to adjust their farms to European norms.

### **The choice of a measure under the Rural Region Development Programme 2007 - 2013**

Characteristic of Bulgarian agriculture is the relatively weak activity of farms in applying for support under a measure of the The Rural Region Development Programme. One of the main reasons for this low activity is the poor awareness of the owners of these farms, with the result that they are not aware of the opportunities presented by these programme. Another major problem farmers encounter is the complex procedure of the application for support under the regulations of these measures. Taking into consideration the relatively low level of education of the people employed in agriculture in the country, it should be pointed out that the application for support under the terms of one of the measures of the programme and its approval become almost impossible without the help of a specialist.

The results of the survey show that 63% of the farms have not applied up to now under some of the measures of The Rural Region Development Programme. This percentage is even higher for registered farmers: 79% of the respondents have not applied for support. This percentage is the lowest for the sole traders - only 36.7 percent of them have not applied. In this case it is alarming that about 66% of the farms that have not applied up to now do not intend to do so in the future, pointing out the already mentioned problems they encounter as reasons for their intention.

It is interesting that the choice of a measure of The Rural Region Development Programme largely depends on the organisational form of the farm. For example, farms that operate as registered farmers apply primarily in terms of the measures "Creating Young Farmers" and "Support for semi-subsistence farms undergoing restructuring". Farms operating in the form of agricultural cooperatives or companies mainly apply in the terms of the measures "Modernisation of farms" and "Adding value to agricultural and forestry products". The observation shows that the farms apply primarily to purchase equipment. This is no accident, bearing in mind the age of the machinery which the farms in the country use.

### **Changes in farm income after the accession of Bulgaria to the EU**

Bulgaria's accession to the EU has affected differently the incomes of the farms. The results of the survey show a negative trend in farm incomes. 48.57% of the farm owners say that their income has been reduced significantly since 2007. The main reason for this trend is the high competition in the common EU market, for which Bulgarian farms are not prepared. About 31.43% of farm incomes have remained unchanged, and only 20 percent of the incomes have increased.

Of interest for study is to find out the relationship between the specialization of the farm and the direction of the change in its income after the accession of Bulgaria to the EU. Thus, if there is a relationship between farm specialization and farm incomes, it will be possible those sectors to be identified in which the farms can be competitive on the European market. In this context, the following hypotheses were composed:

H0: There is no significant relationship between the specialization of farm production and the changes in farm income.

H1: There is a significant relationship between the specialization of farm production and the changes in farm income.

The results of the distribution of respondents' answers are listed in Table 4.

Table 4. Change in farm income in dependence of production specialization  
Таблица 4. Промяна в доходите на земеделските стопанства в зависимост от производствената специализация

Income changes/Production specialization	Grain production	Vegetable growing	Vine and fruit growing
Incomes decrease	4	10	3
Incomes do not change	3	6	2
Incomes increase	6	1	0

Source: Interview with farmers

The following trend is to be seen based on the table: after Bulgaria's accession to EU the income of farms dealing in grain production increased and those involved in vegetable growing, vine and fruit growing has decreased.

Using the chi-squared analysis, statistical values are calculated to show the power of the relationship between the specialization of farm production and the changes in farm income. The estimated empirical characteristic is 9.86. For determining the theoretical value, the admissible error used in economic research was selected as to  $\alpha = 0.05$ , and the number of the degrees of freedom - as to  $v = (r-1)*(C-1) = 4$ . The alternative hypothesis should be confirmed on the hand of these values because  $t_{theor.} < t_{emp.}$ ,  $9.49 < 9.86$ . But as one of the conditions of the chi-squared analysis was not satisfied (in some cells the expected values are less than 5), should be look skeptically of the result obtained. It is assumed that there is a relationship between the specialization of farm production and the changes in the income of the farm. Thus, the farms should aim their efforts at the production specializations that affect their incomes positively.

## Conclusion

The analysis shows that Bulgarian agriculture is facing a very difficult task - its adaptation to a new environment. It could be concluded that the level of awareness of farmers that are familiar with the requirements of the CAP is low. The relationship between the organisational form and the degree of compliance with the requirements is determined as weak. One of the main problems faced by farmers in the fulfillment of the EU CAP requirements is the lack of sufficient funds and the high level of bureaucracy. They can obtain the subsidy with difficulties, and if they manage to do it, the amount of the subsidy is small.

The investigation shows that the choice of a measure of The Rural Region Development Programme largely depends on the organisational form of the farm. Farms operating in the form of agricultural cooperatives or companies mainly apply in the terms of the measures "Modernisation of farms" and "Adding value to agricultural and forestry products" and they apply primarily to purchase equipment.

Bulgaria's accession to the EU has affected differently the incomes of the farms. Thus confirmed one of the hypothesis that there is a relationship between farm specialization and farm incomes. After Bulgaria's accession to EU the income of farms dealing in grain production increased and those involved in vegetable growing, vine and fruit growing has decreased. Farmers with a small holding are pushed to the background.

As a conclusion it is listing some suggestions made by the farmers in the interviews: there should be a harmony between farmers and the state; flow of information towards farmers should be supported; local forums should be organized to give enough information; there should be a co-operation between farmers; subsidies should be aimed at the smaller holdings and farmers, too.

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